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Case review

Cut throat injuries and honor killings: Review of 15 cases in eastern Turkey

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ABSTRACT

Throat cuts could be of homicidal, suicidal or accidental origin. In the cases of death from cut throat, suicide can be distinguished from homicide based on the type and location of the wound and crime scene investigation. The purpose of the current study is to attract attention to the instructive findings for origin determination in deaths by cut throat according to the number and characteristics of the wounds and crime scene investigation. We have reviewed the files of autopsies performed between the years of 2000 and 2010, and compared with previously published case reports; all results were summarized in the current study. The results showed that 60% of cases were male, 40% were female, with 27.9 years of average age. The mean number of wounds was calculated to be 34.3 per case for honor homicides, 7.4 per case for other homicides, and 2.0 per case for suicides. Numbers of wounds were approximately 5 times higher in the honor homicides compared to other homicides. If the number of wounds were excessive, possibility of honor killings should be taken into account. When the killer was a parent not in psychosis, hesitation cuts were detected. Additional lesions were present in 46.7% of the cases, and they were assessed as homicide. Presence of vertebral notch and spinal cord cuts, which require a substantial amount of force and pressure via sharp tools, indicates homicide.

1. Introduction

Cut throat injuries occur by means of cuts in the vital structures of the neck. Cut throat injuries could be homicidal, suicidal or accidental origin. Such wounds resulting from accidents are quite rare; they occur by a piece of glass, industrial machinery or any other sharp-edged tool impacting the neck and resulting in a cut.[1–5] Cut throat injuries using a sharp tool is a rarely observed suicidal method.[6,7] Tentative marks are common in suicidal deaths[8]; it is very unusual of an individual committing suicide by cutting their throat without hesitation marks.[9] Homicides could be honor killings, or could be committed due to mental disorders or domestic violence. Honor killings can be defined as acts of murder of women or men who had an extramarital affair, and are killed by the family members. The murderer is usually the victim's husband or male relatives such as father, brother, brother-in-law, etc. Victims of honor killings are believed to bring shame on the name of family and accused of fouling the family's honor with "black-stain". These homicides are aimed to clean the family's reputation of any dishonorable accusations.

A 2–3% of all suicide cases comprise suicides committed by sharp objects.[10,11] It has been reported that the ratio of homicides committed by sharp objects to suicides is 5:2.[12] It is the duty of the physician who performs the autopsy to identify the tool that has caused the wound by comparing the sharp tool obtained from the morphology of the wound and the way the wound resulting in death occurred. It is essential for the forensic medical expert to be aware of the criminal findings gathered at the scene in order to identify whether the incident was an accident or intentionally carried out by someone.[4]

When met a deadly cut wound, it is necessary to distinguish suicide from homicide based on the type and location of the wound, and the crime scene investigation. Classically, typical suicide cases of forced-cut wounds are related to three consecutive states[1]: observation of a few wounds, not too many, that are positioned to be appropriate for self-infliction[2]; existence of hesitation wounds[3]; absence of concealing of the damages (wounds, clothes, tools, etc.). These three looks aid in distinguishing suicide caused by cuts or stabbing from homicide. Besides, according to the evidence collected through various methods, it has been reported that in cases of suicide there are findings that do not fit the mentioned classical criteria such as several self inflicted wounds, single knife

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wound, absence of hesitation marks or concealing of the wounds.[13–16] In some cases, it is extremely difficult to distinguish between accident, homicide and suicide.[4] The position, number and the depth of the cut in neck are tremendously important in distinguishing suicide from homicide.

In the literature, precise findings to distinguish suicide from homicide have not been reported. It would be possible to determine the findings that would help distinguishing suicide from homicide by rather detailed evaluation of the case. The purpose of this study is to point out the findings that could guide in the identification of the origin (suicide/homicide) according to the results of crime scene investigation, and the number and features of the wounds of the people died as a result of cut throat injuries.

2. Materials and methods

By a retrospective analysis of the files of the autopsies carried out in Sanliurfa and Malatya between 2000 and 2010, cut throat cases were collected to form the series Sanliurfa and Malatya are two major provinces in the southeastern and eastern Turkey, respectively. Cases, average ages, gender, education, the reason of the incident, location of the incident, its origin, and the relationship with the murderer were recorded. The formation of the cuts in the neck were investigated in terms of the existence of hesitation marks and in regard to whether there were other lesions that could impact on the death. Alcohol, stimulant, narcotic, and systemic toxicology analyses of all cases were recorded. Tables were generated as per the results obtained. Seven studies that were previously published and obtained using the key words cut throat injury, throat cutting, stabbing, sharp forces, suicide and homicide were summarized as a table.

3. Results

Mean age, level of education, gender, reason, crime scene and category of each case is reported in Table 1. Cohort contains 15 subjects of which 60% are male ($N = 9$) and 40% are female ($N = 6$). Mean age is 27.9 years (males: 26.0, females: 30.8).

Table 1
Mean age, level of education, reason, origin, relative or acquaintance with murderer, crime scene of cases.

	Male (*N*) %		Female (*N*) %		Total (*N*) %	
Mean age	26.0 (*N*:9)	60.0	30.8 (*N*:6)	40	27.9 (*N*:15)	
Education level						
Illiterate	2	13.3	1	6.7	3	20.0
Primary school	7	46.7	5	33.3	12	80.0
High school and college	0	0	0	0	0	0
Reason						
Mental disorder	2	13.3	2	13.3	4	26.7
Honor	2	13.3	1	6.7	3	20.0
Domestic violence	0	0	2	13.3	2	13.3
Financial stress	1	6.7	1	6.7	2	13.3
Gang fight	1	6.7	0	0	1	6.7
Others	3	20.0	0	0	3	20.0
Crime location						
Indoor	5	33.3	6	40	11	73.3
Outdoor	4	26.7	0	0	4	26.7
Origin						
Homicide	7	46.7	5	33.3	12	80.0
Suicide	2	13.3	1	6.7	3	20.0
Relationship with murderer						
Present	2	13.3	5	33.3	7	46.7
Absent	5	33.3	0	0	5	33.3
Unknown	2	13.3	1	6.7	3	20.0

Eighty percent ($N = 13$) of the subjects had primary education and the rest ($N = 3$) was uneducated. Educated male subjects were 46.7% ($N = 7$) of the case group and the educated females were 33.3% ($N = 5$). Rest of the cohort consists of 13.3% ($N = 2$) uneducated males and 6.7% ($N = 1$) uneducated females. None of the subjects had high school or higher level of education.

Most common cause of the acts was determined to be mental disorders (26.7%; males: 13.3%, females: 13.3%). Remaining cases were classified as honor killings (20%), domestic violence (13.3%), economic conflicts (13.3%), and finally gang fights (6.7%).

In three cases of honor killings average number of wounds per subject is 34.3 (103/3), whereas the average in other homicides and suicides is 7.4 (67/9) and 2.0 (6/3), respectively.

In terms of crime scene setting, 73.3% ($N = 11$) of the cases were indoors. All the females ($N = 6$) and majority of the males ($N = 5$ of 9) were found dead indoor.

The band of cases consists of 80% ($N = 12$) homicides (males: $N = 7$, females: $N = 5$) and 20% ($N = 3$) suicides. None of the cases is of accidental origin.

In 46.7% of the cases (males: $N = 2$, females: $N = 5$) murderer was kin to the subject. Except for one case where the family relation is unknown, all female subjects were murdered by a family member.

Artery cuts, structural cuts, hesitation cuts and other lesions that might contribute to death are shown in Table 2.

66.6% of the cases ($N = 10$) had double sided artery cuts. Homicides are 53.3% ($N = 8$) and suicides are 13.3% ($N = 2$) of this statistics.

When we classify the structural damage on the neck, most commonly damaged structure was trachea (93.3%, $N = 14$), followed by right external jugular veins (v. jugularis externa) (86.7%, $N = 13$). In homicidal cases trachea was again the most commonly cut structure (73.3%, $N = 11$), whereas in suicidal cases both trachea and right v. jugularis externa make up 20% each of the cohort.

All cases of suicide ($N = 3$) showed hesitation marks, on the other hand none of the homicidal cases, except for one where the murderer is the father of the subject, ($N = 11$ of 12) showed such tentative marks.

Cases with a dent in the vertebrae are 33.3% of the cohort. Such dents were nonexistent in the suicidal cases but observed in 41.7% of the homicides ($N = 5$ of 12). Similarly medulla spinalis was damaged in 25% of the homicidal cases ($N = 3$ of 12).

Table 2
Main vascular cuttings, direction of cutting, structures cut in the neck, hesitation marks, and other lesions that might contribute to death according to origin.

	Homicide %		Suicide %		Total %	
Main vascular cuttings						
Unidirectional	4	26.7	1	6.7	5	33.3
Bidirectional	8	53.3	2	13.3	10	66.6
Structures cut in the neck						
Right A. Carotis com.	8/12s	66.6	1/3	33.3	9/15	60.0
Left A. Carotis com.	8/12	66.6	2/3	66.6	10/15	66.6
Right V. Jugularis Ext.	10/12	83.3	3/3	100.0	13/15	86.7
Left V. Jugularis Ext.	10/12	83.3	2/3	66.6	12/15	80.0
Trachea	11/12	91.6	3/3	100.0	14/15	93.3
Esophagus	9/12	75.0	2/3	66.6	11/15	73.3
Larynx	1/12	8.3	0/3	0.0	1/15	6.7
M. spinalis	3/12	25.0	0/3	0.0	3/15	20.0
Notches on the vertebrae	5/12	41.7	0/3	0.0	5/15	33.3
Hesitation incisions						
Existing	1/12	8.3	3/3	100.0	4/15	26.7
Nonexistent	11/12	91.7	0/3	0.0	11/15	73.3
Other lesions						
Existing	7/12	58.3	0/3	0.0	7/15	46.7
Nonexistent	5/12	41.6	3/3	100.0	8/15	53.3

Besides neck injuries, other lesions in the body that might contribute to death are also studied. 53.3% of the cases show no such lesions. All of the cases, which had bodily lesions, were of homicidal origin (46.7%, $N = 7$). Suicidal subjects did not inflict any damage other than the throat cuts.

In systemic toxicology analysis, no toxic substances like alcohol, stimulants or narcotics were detected in any of the cases. In one case, the murderer had used intoxicating substances (case 13). In the other 11 homicide cases none of murderers had used any psychoactive substance.

Raw data of our case series was shown in Table 3. Mood of dead in suicides or mood of killer in homicides was shown in the table. Other features shown in the table are the number of wounds (at neck and on other parts of the body), lesions in the neck, hesitation marks and additional lesions that contributed to death. Weapon used in all cases were kitchen knives, except for only one case in which hunting knife was used in a gang fight (case 13).

Previous literature on cut throat injuries was summarized in Table 4. Mental statuses of the victim or killer were shown according to the nature of the case. The number of wounds at neck and on other parts of the body was also presented in Table 4. Presence of hesitation marks is not taken into account while calculating the number of wounds.

4. Discussion

It is of vital importance to determine the suicidal or homicidal origin of cut throat injuries in forensic medicine. Most of the literature on this subject is mere presentations of cases. They commonly emphasize the difficulty of distinguishing homicides and suicides. Hesitation cuts are usually interpreted as of suicidal origin.[17–23] In this respect, data that would shed a light on such differentiations would be very valuable.

In previous studies of cut throat injuries, male subjects were the majority.[6,8] In our series male:female ratio was 1.5:1. This might be attributable to the dominance of males in the social settings of the cases. Ratio of homicide:suicide was 4:1 and among the homicides male:female ratio of victim was 1.4:1. This ratio is found to be 2:1 in suicides, which is the same figure Byard et al. reported[24] and similar to the results in the study by Saeed et al.[25] Group of cases does not include any case of accidental origin. Ratio of homicides to suicides is similar to the ratios reported in the literature before.[10,26,27]

In previous studies, suicidal rates of males and females were found to be comparable. In a cohort by Bhattacharjee et al. of 26 cases, there were 13 males and 13 females; in Ohshima and Kondo cohort of 8 cases comprise 4 male and 4 female cases, and in Fukube et al. retrospective study of 65 suicides there were 49 males and 16 females. We think that the discrepancy in our study is due to the small number of cases.

In our study, mean age of the cohort is found to be 27.9 (males: 26.0, females: 30.8). In previous studies subjects were predominantly in their 30s, on the other hand cases at every age is reported.[6–8,14] High incidence of cases in their third decade can be explained by higher economical conditions and social presence as well as conflicts in marriage or business life which is common at these ages.

Educational level of the subjects was also studied. 80% of the victim ($N = 12$ of 15) had primary education and the rest ($N = 3$ of 15) was uneducated. Among the educated subjects majority was males by 46.7% ($N = 7$ of 15) whereas females make up 33.3% ($N = 5$ of 15). In the cohort there is no subject with high school or higher level of education. Extreme violence such as cutting the throat of another human being is not expected from an educated person. Our findings support this preconception.

When investigating suicidal statistics, circumstances like location, cultural, religious and social norms should be considered.[25] Problems in family life, mental disorders, physiological stress and poverty are some factors that may trigger suicides.[18] Ohshima et al. reported that in 7 out of their 8 cases some type of mental disorder is identified. Among our subjects 4 of them had a mental disorder and 2 of these committed suicide. Among 3 suicidal cases 2 had mental disorder. These statistics are consistent with Ohshima et al. Percentage of subjects with mental disorder is found to be 26.7% ($N = 4$ of 15, male: 13.3%, female: 13.3%). One of the mental disorder cases committed murder by cutting the throat of the victim, whereas another one was killed by a relative in this way.

In this region of Turkey it is commonly thought that cut throat injuries are due to honor killings, however; in our study the most dominant reason turned out to be mental illness with a prevalence of 26.7%. Cut throat injuries due to honor reasons are on the second rank with 20%. Other reasons are determined to be domestic violence (13%), economical reasons (13%), and gang fights (7%).

There is an approximately fivefold difference between the honor killings and other homicides regarding the number of wounds. The abundance of wounds is a sign of honor killings. In our opinion, the wounds being significantly more in homicides committed with an impulse of honor is due to the intense stress the killer is under and lost control owing to an extreme anger.

In our study, we have identified that 73.3% ($N = 11$) of cut throat cases occurred indoors. The scene was indoors in 40% ($N = 6/15$) of the female cases and %33.3 ($N = 5/15$) for the male cases. We have no strangled female cases outdoors. All cases of suicide have expectedly been found indoors. Eight of the 12 committed homicides occurred indoors. Ohshima and Kondo[14] reported in their study that of the 8 suicide cases, 6 were committed indoors, one occurred outdoors, and one was not specified. The cases occurring indoors are derived from reasons such as concerns of getting caught and avoiding the eyewitnesses.

A 46.7% of the subjects ($N = 7/15$) were determined to have a relationship with the murderer (females: 33.3%, males: 13.3%). Other than one case unknown in terms of relationship, there does not exist a female case where there is no relationship with the murderer. It is an anticipated condition for people with mental disorders and the ones who commit honor killing to commit a crime towards their relatives or acquaintances. As shown in Table 4, relationship in homicides is an expected situation.[28] Cut throat cases due to mental illness have often been reported in the literature.[17,21–23,28–30]

In our study, of the structures cut in the neck, trachea was at the top with 93.3% ($N = 14$). The right v. jugularis externa cuts came second at 86.7% ($N = 13$). Bhattacharjee et al.[6] reported that in every one of their 26 cases hypopharynx and/or larynx was cut open, and in 15 cases trachea was cut.

In cases of homicide most commonly damaged structure was trachea (73.3%), followed by right and left v. jugularis externa (66.6% each). However, in suicides most frequent ones were trachea and right v. jugularis externa (20% each), followed by left carotid artery (a. carotis communis), left external jugular vein (v. jugularis externa) and esophagus (13.3%). In our data, in 66.6% of the cases there were double sided main artery cuts. Homicide cases with such damage make up 53.3% of the group and the suicides make up 13.3%.

In suicides, it is usually expected to have a unidirectional cut. We could not identify single or double cuts in the neck as a distinguishing characteristic in terms of the origin of the case. We think this results from the scarcity of the number of cases and the

Table 3
Features of cases: mood of dead or killer, number of wounds (at neck and on the other parts of the body), lesions had occurred in the neck, hesitation marks, additional lesions that contributed to death.

Case/gender/age	Mental status: dead/killer suicide/homicide	Crime location	Number of wounds – neck/other	Lesions of the neck	Hesitation marks[a]	Additional lesions that contributed to death
1/Male/36	Suicide: psychotic depression, unemployed	In own home	2/1	Both of V.J. Ext., Trachea, Larynx, hyoid bone	Present	None
2/Female/58	Suicide: financial stress	In own home	2/0	Both of V.J. Ext., both of A. Carotis, Trachea, Esophagus	Present	None
3/Male/38	Suicide: financial stress	In own home	1/0	Left A. Carotis comm, left V.J. Ext., Trachea, Esophagus	Present	None
4/Male/38	Homicide: killer was father in law, in order to honor	Rural area (mountain)	1/5	Both of V.J. Ext., both of A. Carotis, Trachea, Esophagus, Larynx, m. Spinalis, vertebral notch	None	None
5/Male/48	Homicide: killer was not relative, financial stress	Rural area (terrain)	1/0	Left A. Carotis comm., left V.J. Ext	None	Present
6/Male/17	Homicide: killer was not relative, in order to honor	In own home	4/64	Both of V.J. Ext., Trachea, Esophagus,	None	Skull fractures, lung, heart, liver, stomach, intestinal wounds
7/Female/4	Homicide: killer was father, psychotic	In own home	1/0	Both of V.J. Ext., both of A. Carotis, Trachea, Esophagus, Larynx, m. Spinalis, vertebral notch	None	None
8/Male/3	Homicide: killer was father, psychotic	In own home	1/0	Both of V.J. Ext., both of A. Carotis, Trachea, Esophagus, Larynx, m. Spinalis, vertebral notch	None	None
9/Female/33	Homicide: killer was husband, psychotic depression, unemployed	In own home	8/16	Left A. Carotis comm., left V.J. Ext., Trachea, Esophagus, Epiglottis, hyoid bone	None	Left lung, heart
10/Male/5	Homicide: killer was unknown	In own home	7/2	Both of V.J. Ext., both of A. Carotis comm, Trachea, Esophagus, Larynx, vertebral notch, hyoid bone	None	None
11/Female/20	Homicide: killer was brother, in order to honor	In own home	4/25	Both of V.J. Ext., both of A. Carotis comm, Trachea, Esophagus	None	Present
12/Female/29	Homicide: killer was husband, domestic violence	In own home	1/0	Both of V.J. Ext., both of A. Carotis comm, Trachea, Esophagus, hyoid bone	None	None
13/Male/19	Homicide: killer was not relative, Gang fight	Terrain	3/5	Both of V.J. Ext., Trachea	None	Subdural hematoma
14/Female/41	Homicide: killer was father, domestic violence	In own home	7/14	Right A. Carotis comm., right V.J. Ext., Trachea	Present	Lung and peritoneal cuts
15/Male/30	Homicide: killer was unknown	Terrain	1/0	Right A. Carotis comm., right V.J. Ext., Trachea, Esophagus	None	None

[a] Hesitation cuts are not included in the number of wounds.

Table 4
Summary of case reports previously published.

Sources	Gender and age of dead	Mental status: suicide-dead/homicide-killer		Location	Number of wounds	Lesions of the neck	Additional lesions that contributed to death
		Suicide	Homicide				
Ventura et al.	Male/36	Suicide	–	Bathroom toilet	3/36	Left V.J. Ext., Left A. Carotis	Left A. radialis
Viel et al.	Female/43	Suicide	–	Bathroom	1/14	Soft tissue cuts	Heart and lung cuts
Adoga et al.	Male/35	Suicide attempt – unemployed, depression	–	Bathroom	1	Hipopharynx, Epiglottis, Larynx	–
	Male/27	Suicide attempt – unemployed, depression	–	–	1	Hipopharynx, Larynx	–
	Male/55	Suicide attempt – domestic violence	–	Bedroom	1	Hipopharynx, Larynx	–
Karger et al.	Male/46	Suicide	–	Home	1	A. Carotis, A. Vertebralis	–
Shetty et al.	Male/45	Suicide – domestic and financial	–	Market	1	Larynx, crycoid and tyroid cartilage, Trachea, left A. C. Comm., both of V.J. Ext.	–
Srisont et al.	Male/27	Suicide – sickness		Bedroom	1/3	Tyroid cartilage, Trachea,	Lung cut
Dettling et al.	Male/4	–	Killer mother, depression	–	–	Main artery and veins of neck	Lung cut
	Male/5	–	Killer mother, depression	–	–	Main artery and veins of neck	Lung cut
	Female/14	–	Killer father, depression	–	–	Main artery and veins of neck	Wound in chest
	Male/3	–	Killer father, depression	–	–	Right A. Carotis	–
	Female/ 4.5 months	–	Killer mother, depression	–	–	Main artery cut	–
	Male/3	–	Killer mother, depression	–	–	Main artery cut	Wound in chest

two people committing two of the total three suicides being mental patients.

In 41.7% ($N = 5/12$) of the homicide cases, notches in the vertebrae and in 25% ($N = 3/12$) medulla spinalis cuts were detected. Presence of lesions on bone and cartilage has been reported to be a distinguishing property of homicides.[31] In our cases of suicidal origin, notch in the vertebrate or medulla spinalis cuts were not found. This condition might stem from the typical force being applied to the neck in suicide cases not being as much as the one in homicides.

There are hesitation cuts in all our cases of suicide origin (Fig. 1). Except for a person murdered by their father (case 14), hesitation cuts do not exist in any of our homicide-originated cases. However, there are no hesitation cuts in our case where two sibling children were murdered by a father in psychosis (cases 7 and 8) (Fig. 2). Under the circumstances where the murderer is the victim's parent, hesitation cuts on the victim have been reported.[28] In cases where the killer is the parent, hesitation cuts do exist if the killer is not in psychosis, yet such cuts do not exist if the killer is in psychosis. We think this condition could be helpful in the determination of the origin. Hesitation cuts, although not a must, are expected findings in cases of suicide origin. Fukube and colleagues,[6] in 37 out of 65 suicide cases, and Ohshima and Kondo[14] in half of the 8 suicide cases have reported hesitation cuts.

When considered in terms of the presence of other lesions that could impact on death, it was detected that in 46.7% of the cases ($N = 7/15$) there were other lesions. The ones where other lesions were detected were all of homicidal origin. Other lesions were not detected in any of our suicide-originated cases. In the literature, there are cases of suicide, which report additional lesions contributing to death other than the cut in neck.[22,23] As seen in Table 4, that ratio is small. Whereas it is anticipated to have other lesions that might impact on death in cases of homicide origin, other lesions are not expected in cases of suicide origin.

We have not detected any alcohol, toxic substances, stimulants, narcotics or anesthetics in the toxicological analysis of our cases.

Fig. 1. Hesitation marks on the left side of neck (suicide).

Fig. 2. All vital structures of the neck – including spinal cord – were cut (homicide).

The toxicological analysis being negative did not aid in the determination of the origin in the cases identified in the current series. Ohshima and Kondo[14] have reported that in two cases out of eight the toxicological analysis had been positive. Committing suicide using medicines or substances is not rare; however, beside the methods used by persons committing suicide by random means, use of toxic substances or high dose medicine is a situation that could be encountered.

5. Conclusion

In cut throat cases, rather than the unidirectional or bidirectional cuts, notches on the vertebrae that require large amount of force and damage in medulla spinalis indicate a possible murder. In homicidal cases but not in suicides other fatal lesions are expected. Excessive number of wounds suggests an honor killing. Observation of hesitation cuts is a non-conclusive evidence of a suicide. However one should keep in mind that in murders committed by someone personally close to the subject these tentative marks may also be seen. Note that there are cases of suicides where many cuts exist on the neck and on the other parts of the body. Identification of the cause should start with crime scene investigation, autopsy should be performed and people who know the subject should be consulted and the final verdict should be given in the light of these evidences.

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Conflict of Interest

The authors stated that there are no conflicts of interest regarding the publication of this article.

References

1. Di Maio DJ, Di Maio VJM. *Forensic pathology*. 2nd ed. Boca Raton: CRC Press; 2001. p. 171–06.
2. Saukko P, Knight B. *Knight's forensic pathology*. 3rd ed. London: Arnold Press; 2004. p. 235–44.
3. Demirci S, Dogan KH, Gunaydin G. Throat-cutting of accidental origin. *J Forensic Sci* 2008;**53**:965–7.
4. Reuhl J, Bratzke H. Death caused by a chain saw – homicide, suicide or accident? A case report with a literature review (with 11 illustrations). *Forensic Sci Int* 1999;**105**:45–59.
5. Fracasso T, Karger B. Two unusual stab injuries to the neck: homicide or self-infliction? *Int J Leg Med* 2006;**120**:369–71.
6. Fukube S, Hayashi T, Ishida Y, Kamon H, Kawaguchi M, Kimura A, et al. Retrospective study on suicidal cases by sharp force injuries. *J Forensic Leg Med* 2008;**15**:163–7.
7. Bhattacharjee N, Arefin SM, Mazumder SM, Khan MK. Cut throat injury: a retrospective study of 26 cases. *Bangladesh Med Res Conc Bull* 1997;**23**:87–90.
8. Karger B, Niemeyer J, Brinkmann B. Suicides by sharp force: typical and atypical features. *Int J Leg Med* 2000;**113**:259–62.
9. Bernard Knight. *Lawyers guide to forensic medicine by Bernard Knight*. 2nd ed. London: Cavendish Publisher; 1998. p. 87.
10. Karlsson T, Ormstad K, Rajs J. Patterns in sharp force fatalities – a comprehensive forensic medical study: part 2. Suicidal sharp force injury in the Stockholm area 1972–1984. *J Forensic Sci* 1988;**33**:448–61.
11. Reuhl J, Lutz FU. Suicide in a large West German city (1985–1989). *Versicherungsmedizin* 1992;**44**:13–5.
12. Bajanowski T, Varro A, Sepulchre MA. Death caused by sharp injury. Criminologic and criminalistic aspects. *Arch Kriminol* 1991;**187**:65–74.
13. Betz P, Eisenmenger W. Unusual suicides with electric saws. *Forensic Sci Int* 1995;**75**:174–9.
14. Ohshima T, Kondo T. Eight cases of suicide by self-cutting or -stabbing: consideration from medico-legal viewpoints of differentiation between suicide and homicide. *J Clin Forensic Med* 1997;**4**:127–32.
15. Karger B, DuChesne A, Ortmann C, Brinkmann B. Unusual selfinflicted injuries simulating a criminal offence. *Int J Leg Med* 1997;**110**:267–72.
16. Rautji R, Rudra A, Behera C, Kulshrestha P, Dogra TD. An unusual suicide by stabbing: a case report. *Med Sci Law* 2003;**43**:179–81.
17. Shetty BS, Padubidri JR, Bhandarkar AM, Shetty AJ, Shetty M. "Atypical suicidal" cut throat injury – a case report. *J Forensic Leg Med* 2009;**16**:492–3.
18. Hasekura H, Fukushima H, Yonemura I, Ota M. A rare suicidal case of a ten-year-old child stabbing himself in the throat. *J Forensic Sci* 1985;**30**:1269–71.
19. Chadly A, Marc B, Paraire F, Durigon M. Suicidal stab wounds of the throat. *Med Sci Law* 1991;**31**:355–6.
20. Olze H, Hosse U, Rosenbaum F, Schmeling A, Schneider V. Homicide by stab to the neck with subsequent attempted suicide by cut to the neck. *Arch Kriminol* 2005;**215**:85–93 [article in German].
21. Srisont S, Peonim AV, Chirachariyavej T. An autopsy case report of suicide by multiple self-cutting and self-stabbing over the chest and neck. *J Med Assoc Thai* 2009;**92**:861–4.
22. Viel G, Cecchetto G, Montisci M. An unusual case of suicide by sharp force. *Forensic Sci Int* 2009;**184**:12–5.
23. Ventura F, Bonsignore A, Gallo M, Portunato F, De Stefano F. A fatal case of suicidal stabbing and cutting. *J Forensic Leg Med* 2010;**17**:120–2.
24. Byard RW, Klitte A, Gilbert JD, James RA. Clinicopathologic features of fatal self-inflicted incised and stab wounds: a 20-year study. *Am J Forensic Med Pathol* 2002;**23**:15–8.
25. Saeed A, Bashir MZ, Khan D, Iqbal J, Raja KS, Rehman A. Epidemiology of suicide in Faisalabad. *J Ayyub Med Coll Abbottabad* 2002;**14**:34–7.
26. Ormstad K, Karlsson T, Enkler L, Law B, Rajs J. Patterns in sharp force fatalities – a comprehensive forensic medical study. *J Forensic Sci* 1986;**31**:529–42.
27. Karlsson T. Multivariate analysis ('forensiometrics') – a new tool in forensic medicine. Differentiation between sharp force homicide and suicide. *Forensic Sci Int* 1998;**94**:183–200.
28. Dettling A, Althaus L, Haffner HT. Criteria for homicide and suicide on victims of extended suicide due to sharp force injury. *Forensic Sci Int* 2003;**134**:142–6.
29. Adoga AA, Ma'an ND, Embu HY, Obindo TJ. Management of suicidal cut throat injuries in a developing nation: three case reports. *Cases J* 2010;**3**(2). art65.
30. Karger B, Niemeyer J, Brinkmann B. Physical activity following fatal injury from sharp pointed weapons. *Int J Leg Med* 1999;**112**:188–91.
31. Brunel C, Fermanian C, Durigon M, de la Grandmaison GL. Homicidal and suicidal sharp force fatalities: autopsy parameters in relation to the manner of death. *Forensic Sci Int* 2010;**198**:150–4.